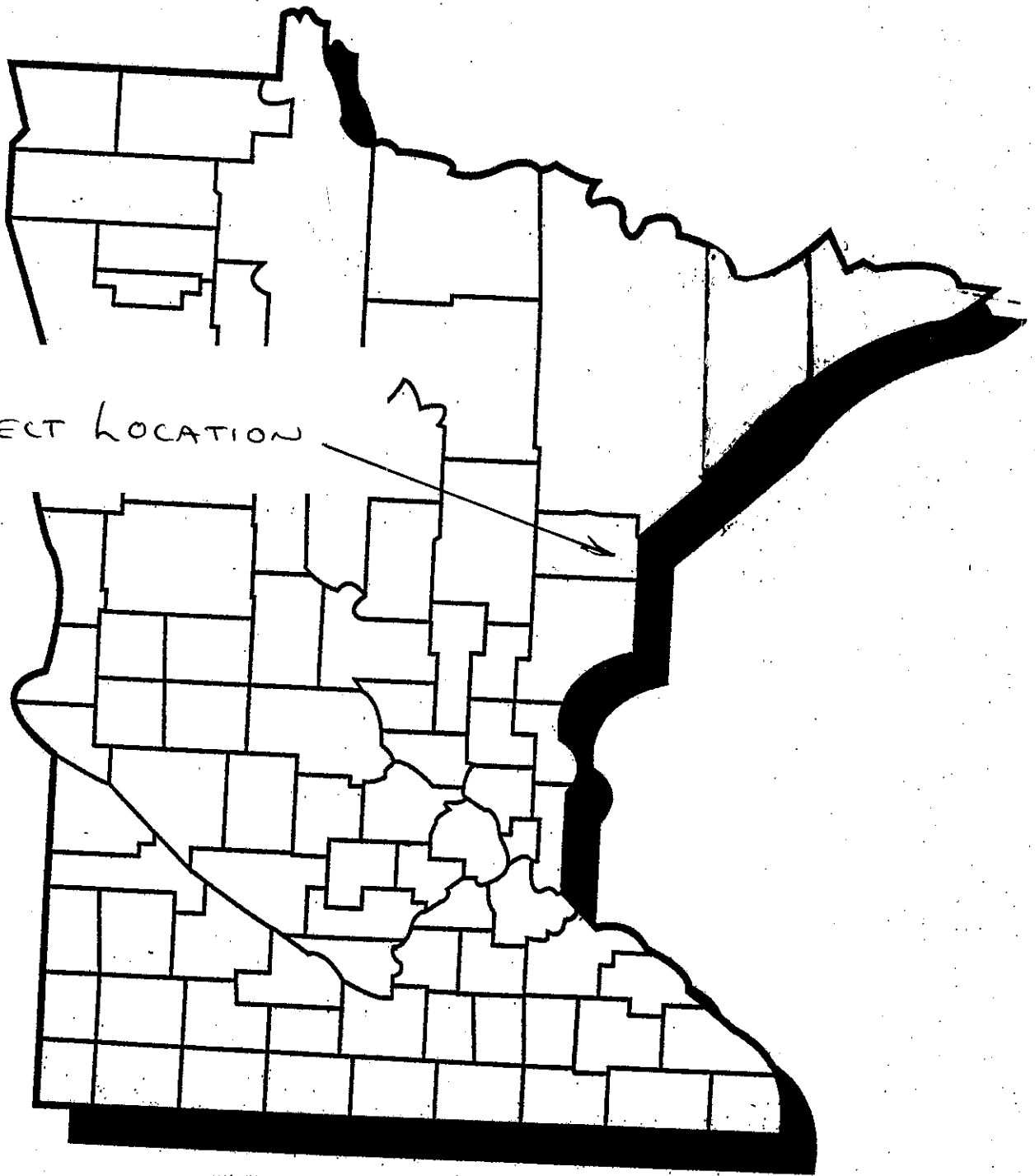


PROJECT LOCATION



03-05801-TWP  
Dwa 1

USGS Quad

Cloquet, Mn

Goodbourn Rd

Eno Project

Eno Project

W Chus Lake Rd

Goodbourn Rd

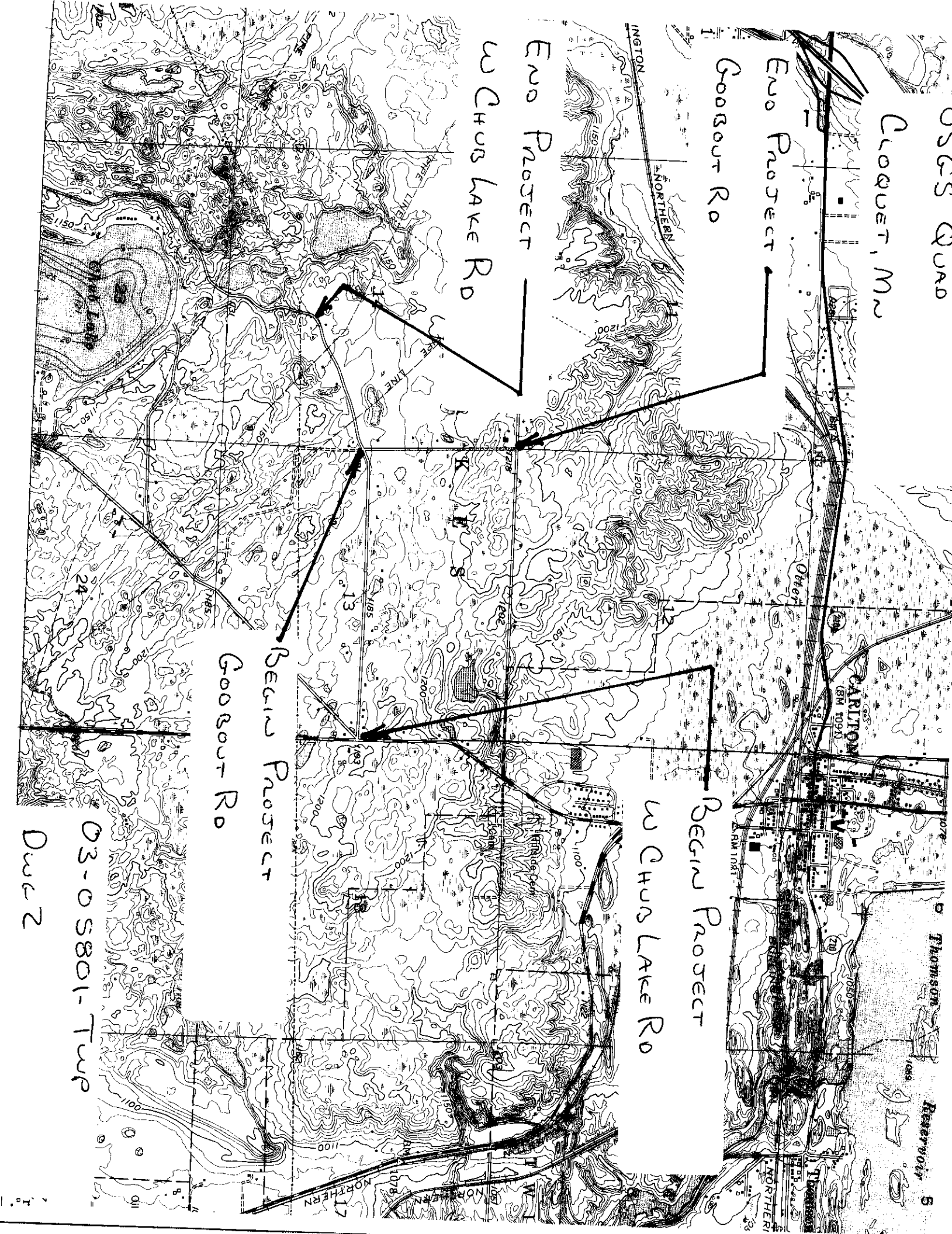
Begin Project

Begin Project

W Chus Lake Rd

03-05801-Twp

Duc 2



# TWIN LAKES TOWNSHIP CARLTON COUNTY, MINNESOTA

CONSTRUCTION PLAN FOR GRADING, DRAINAGE, AND  
AGGREGATE BASE ON PORTIONS OF WEST CHUB LAKE ROAD,  
AND THE ENTIRE LENGTH OF GODBOUT ROAD

(SEE LOCATIONS ON MAP)

GROSS LENGTH: 11,004 FEET (2.084 MILES)

WEST CHUB LAKE ROAD: 8,245 FEET  
GODBOUT ROAD: 2,759 FEET

THE 2000 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION  
STANDARD SPECIFICATIONS FOR CONSTRUCTION SHALL GOVERN.

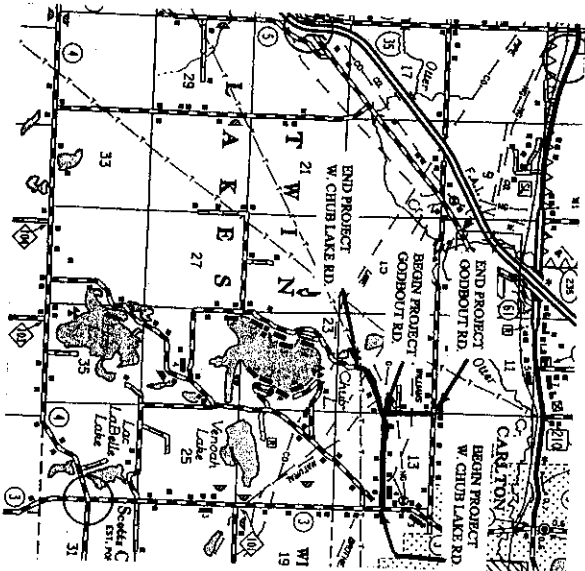
## INDEX

TITLE SHEET	
CONSTRUCTION SIGNING	1
ESTIMATED QUANTITIES	1
STANDARD PLATES	2
PLAN & PROFILE	3-4
CROSS SECTION	5-23
EROSION CONTROL PLAN	24-27
	58-61

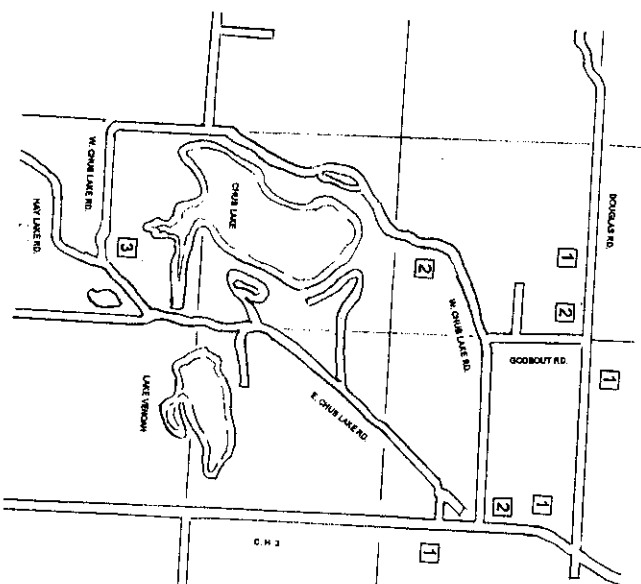
APPROVED:

TWIN LAKES BOARD CHAIRMAN

DATE



PROJECT LOCATION  
PROJECT LOCATED IN  
SEC. 13 & 14, T49N, R17W



## CONSTRUCTION SIGNING

WORK SHALL NOT COMMENCE UNTIL ALL SIGNING IS IN PLACE.  
SIGNAGE INDICATED ON MAP APPROVE IS MINIMUM REQUIRED. PROVIDE ADDITIONAL  
SIGNING AND FLAGGERS AS OPERATIONS DICTATE.  
ALL SIGNAGE UNITS SHALL BE EQUIPPED WITH FLASHERS.

MAP LEGEND / SIGNAGE REQUIRED:

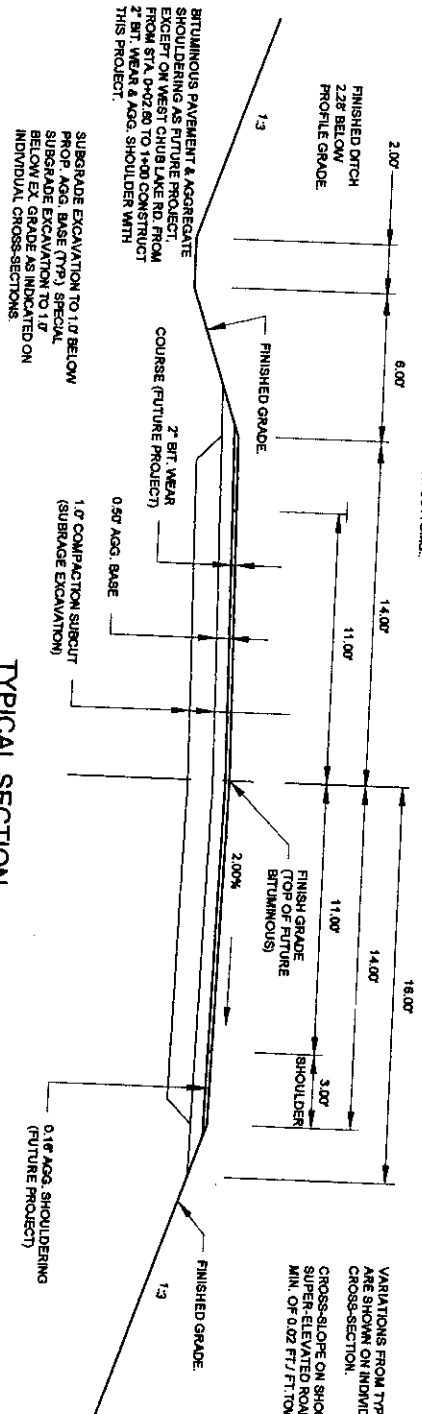
- [1] "CONSTRUCTION AHEAD"
- [2] "STANDARD BARRICADE W/ SIGNS - 'ROAD CONSTRUCTION AHEAD',  
'ROAD CLOSED', 'LOCAL TRAFFIC ONLY'."
- [3] "STANDARD BARRICADE W/ SIGNS - 'ROAD CLOSED 2.5 MILES AHEAD',  
'LOCAL TRAFFIC ONLY'."

03-05801-Twp  
Dw 3

SHEET 1 OF 61	TITLE SHEET WEST CHUB LAKE & GODBOUT ROADS RECONSTRUCTION TWIN LAKES TOWNSHIP, CARLTON COUNTY, MN		DATE: MAY 2003 SURVEY BY: MUM DRAWING BY: MUM DESIGN BY: MUM CHECKED BY: MUM REVISIONS: 6/22/03	MICHAEL J. MILLER PROFESSIONAL ENGINEER 5445 TAFT ROAD DULUTH, MINNESOTA 55803 (218) 721-5065	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer in the State of Minnesota. Signature: <i>Michael J. Miller</i> Date: 5/22/03 Reg. No. 14850

ALL DIMENSIONS AND SLOPES SHOWN ON TYPICAL SECTIONS ARE APPROXIMATE. ROUND OFF TOP OF BACKSLOPES, DITCH BOTTOMS, AND TOE OF FILL SLOPES.

PLACE 3" TOPSOIL AND PERFORM TURF ESTABLISHMENT ON ALL SLOPES AND DITCH BOTTOMS.



VARIATIONS FROM TYPICAL SECTION ARE SHOWN ON INDIVIDUAL CROSS-SECTION. CROSS-SLOPE ON SHOULDERS W/ SUPER ELEVATED ROADWAY AT MIN. OF 0.02 FT/FT TOWARD DITCH.

### TYPICAL SECTION

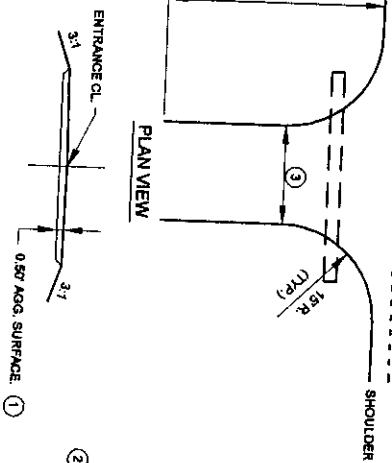
ROAD CL.

ENTRANCE NOTES:

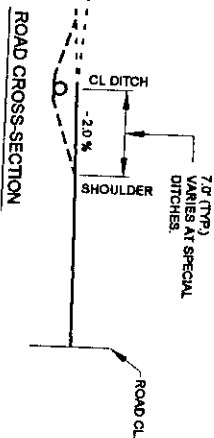
- ① AT EXISTING BIT. SURFACED ENTRANCES, CONSTRUCT 0.50' AGG. BASE ALLOWING FOR 2" BIT. SURFACE TO BE CONSTRUCTED WITH FUTURE PROJECT.
- ② GRADES AS INDICATED ON CROSS-SECTIONS.
- ③ MINIMUM WIDTH: GREATER OF 12.00' OR WIDTH OF EXISTING ENTRANCE.
- ④ LENGTH AS REQUIRED TO MEET EXISTING SURFACE AT GRADES INDICATED ON CROSS-SECTIONS.

PLACE 3" TOPSOIL AND PERFORM TURF ESTABLISHMENT ON ALL SLOPES AND DITCH BOTTOMS.

PLAN VIEW

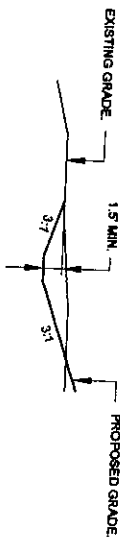


ENTRANCE CROSS-SECTION



### TYPICAL RURAL ENTRANCE

PLACE 3" TOPSOIL AND PERFORM TURF ESTABLISHMENT ON ALL SLOPES AND DITCH BOTTOMS.



**SPECIAL DITCH - GODBOUT RD.**  
STA. 16+25 TO 20+28, RT. 8  
STA. 18+75 TO 21+00, LT.

TYPICAL SECTIONS & DETAILS  
WEST CHUB LAKE & GODBOUT ROADS  
RECONSTRUCTION  
TWIN LAKES TOWNSHIP, CARLTON COUNTY, MN

DATE: MAY 2003  
SURV. BY: M.M.  
DRAWING BY: M.M.  
DESIGN BY: M.M.  
CHECKED BY: M.M.  
REVISIONS: 5/26/03

**MICHAEL J. MILLER**  
PROFESSIONAL ENGINEER  
5445 TAFT ROAD  
DULUTH, MINNESOTA 55803  
(218) 721-5085

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
Michael J. Miller, P.E.  
Date: 5/26/03 Reg. No. 14860

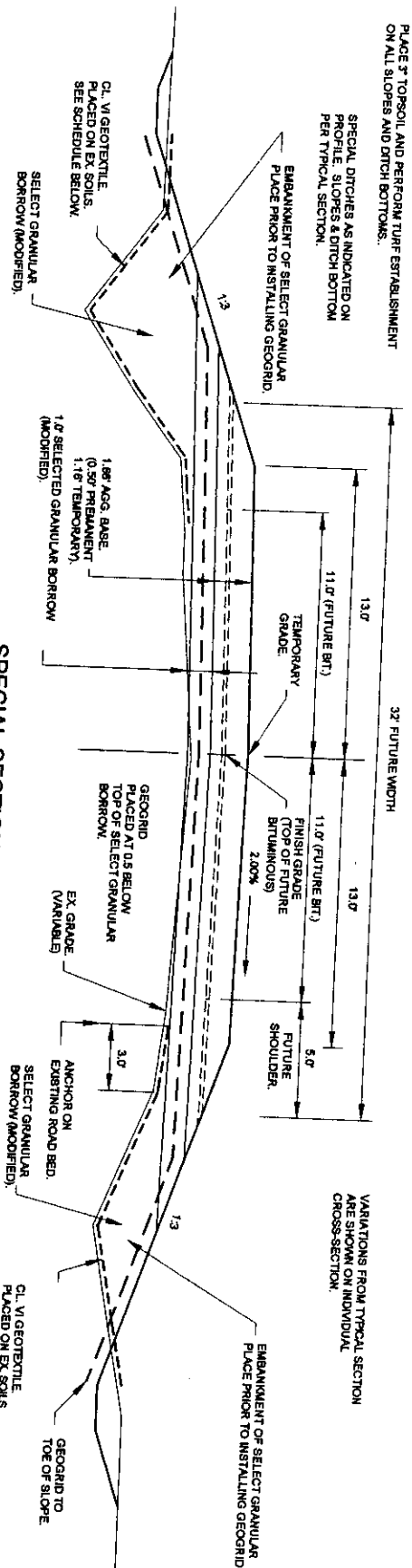
SHEET 3  
OF 61

03-05801-Twp  
Dw-y

SPECIAL DITCHES AS INDICATED ON  
PROFILE. SLOPES & DITCH BOTTOM  
PER TYPICAL SECTION.

2011

VARIATIONS FROM TYPICAL SECTION  
ARE SHOWN ON INDIVIDUAL  
CROSS-SECTION



## SPECIAL SECTION

**STA. 32+26 TO 38+80**

TRANSITION TO SPECIAL SECTION:  
STA. 30+37.63 TO 32+28.22  
TRANSITION BACK TO TYPICAL SECTION:  
STA. 38+80 TO 41+03.71.

1. INSTALL GEOTEXTILE IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR THE APPLICATION INDICATED.
2. CLEAR TO CONSTRUCTION LIMIT. DO NOT GRUB, TRIM STUMPS AND STUBBLE TO GROUND LEVEL, LEAVING ROOT STRUCTURE IN PLACE. REMOVE OTHER ITEMS THAT MAY CAUSE DAMAGE TO GEOTEXTILE.
3. ANCHOR GEOTEXTILE ON EXISTING ROAD BED. PROVIDE CONTINUOUS PANEL OF GEOTEXTILE FROM ANCHOR POINT TO LIMITS OF SELECT GRANULAR BORROW UNTIL MATERIAL EXCESS GEOTEXTILE IN EACH PANEL TO CONTAIN SELECT GRANULAR BORROW MATERIALS. DURING CONSULTATION OF UNDERLYING SOILS, PROVIDE TOTAL LENGTH OF EACH PANEL AS INDICATED IN SCHEDULE AT RIGHT AS MEASURED FROM ANCHOR LOCATION.
4. LIMIT PLACEMENT OF SELECT GRANULAR BORROW MATERIAL TO WITHIN TOES OF SIDE SLOPES INDICATED ON CROSS-SECTIONS.
5. TRIM AND REMOVE EXCESS GEOTEXTILE PRIOR TO FINAL PAVEMENT AS DIRECTED BY ENGINEER.

GEOTECHNICAL SCHEDULE			
STA. / INTERVAL	GEOTECHNICAL LEFT	GEOTECHNICAL RIGHT	
30+00 TO 32+00	27.0	27.0	
32+00 TO 33+00	36.0	36.0	
33+00 TO 34+00	36.0	36.0	
34+00 TO 35+00	33.0	32.0	
35+00 TO 36+00	32.0	32.0	
36+00 TO 37+00	30.0	28.0	
37+00 TO 38+00	30.0	28.0	
38+00 TO 39+00	30.0	28.0	

LOCATION
STA. 30+00, RT.
STA. 31+00, LT.
STA. 32+00, RT.
STA. 33+00, LT.
STA. 34+00, RT.
STA. 35+00, LT.
STA. 36+00, RT.
STA. 37+00, LT.
STA. 38+00, RT.
STA. 39+00, LT.
STA. 40+00, RT.
STA. 41+00, LT.

**NOTE:**  
**DELINEATORS PLACED ON SIDE SLOPE**  
**2.0' FROM SHOULDER.**

TYPICAL SECTIONS & DETAILS  
WEST CHUB LAKE & GODBOUT ROADS  
RECONSTRUCTION  
TWN LAKES TOWNSHIP, CARLTON COUNTY, MN

DATE: MAY 2003  
SURVEY BY: MJM  
DRAWING BY: MJM  
DESIGN BY: MJM  
CHECKED BY: MJM  
REVISIONS: 5/28/03

**MICHAEL J. MILLER**  
**PROFESSIONAL ENGINEER**  
5445 TAFT ROAD  
DULUTH, MINNESOTA 55803  
(218) 721-5085

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Illinois.

Michael J. Miller, P.E.  
Date: 5/25/03 Reg. No. 14850

SHEET 4  
OF 61

03-05801-Twp  
DwS

# 9. IMPACT SUMMARY

For impacts in additional counties or watersheds, complete separate tables.

County: Cartton

Major watershed number:     

Location of Impact	For Public Waters	Water-Course	Lake	Wetland												
				Indicate area of fill or impact in acres by wetland type								Total Area of wetland impact by location				
				1	1L	2	3	4	5	6	7		8			
Top Line: site number or station Bottom Line: 1/4, 1/2, S, T, R*	Indicate name and ID Number	Indicate length of impact area in linear feet	Indicate area of fill or impact in acres													
WL 1 NW of SE, S 14, T48N, R17W														0.00		
WL 2 NE of NE, S 14, T48N, R17W													.0044			
WL 3 NW of NW, S13, T48N, R17W							.0854							0.09		
WL 4 SW of NW, S13, T48N, R17W													.0365	0.04		
WL 5 SW of NW, S13, T48N, R17W												.0542		0.05		
WL 6 SW of NW, S13, T48N, R17W													.1727	0.17		
W. Chub Lake Rd. Sta. 51+00 to 52+00 LT NW of SW, S13, T48N, R17W													.0143	0.01		
WL 7 SE of NW, S13, T48N, R17W													.0110	0.01		
WL 8 SE of NW S13, T48N, R17W												.0269		0.03		
TOTALS:																
0			0.00					0.09					0.08	0.24	0.30	0.71
WATER-COURSE																
LAKE																
1																
1L																
2																
3																
4																
5																
6																
7																
8																
GRAND TOTAL																

10. TYPE (such as rock, sand, clay or concrete) AND AMOUNT OF FILL MATERIAL (indicate amount in cubic yards):

03-05801-Twp

*For impacts in additional counties or watersheds, complete separate tables.*

Major watershed number:

Location of Impact	For Public Waters	Water-Course	Lake	Wetland										
				Indicate area of fill or impact in acres by wetland type								Total Area of wetland impact by location		
				1	1L	2	3	4	5	6	7		8	
Top Line: site number or station Bottom Line: 1/4, 1/4, S, T, R*	Indicate name and ID Number	Indicate length of impact area in linear feet	Indicate area of fill or impact in acres											
SUBTOTALS - Previous Page		0	0				0.09				0.08	0.24	0.30	0.71
WL 9														
NW of SW, S13, T48N, R17W										.0034			.1963	0.20
WL 11														
SW of NE, S13, T48N, R17W										.021				0.02
					</									

**10. TYPE (such as rock, sand, clay or concrete) AND AMOUNT OF FILL MATERIAL (indicate amount in cubic yards),**

63-05801-TwP

3  
D367